

## Claims

We claim:

1. A computer-implemented method for creating a graphical program, the  
5 method comprising:

creating a graphical user interface for the graphical program in response to user  
input;

displaying an event structure node in a block diagram for the graphical program in  
response to user input; and

10 configuring the event structure node to receive and respond to one or more user  
interface events during execution of the graphical program.

2. The method of claim 1,

wherein the event structure node comprises one or more sub-diagrams;

15 wherein said configuring the event structure node to receive and respond to the  
one or more user interface events comprises configuring the one or more sub-diagrams to  
receive and respond to the one or more user interface events.

3. The method of claim 2,

20 wherein, for each of the one or more sub-diagrams, said configuring the sub-  
diagram comprises:

specifying one or more user interface events to which the sub-diagram  
corresponds, in response to user input;

including graphical source code in the sub-diagram in response to user input,  
25 wherein the graphical source code is operable to respond to the one or more user interface  
events to which the sub-diagram corresponds.

4. The method of claim 3,

wherein said including graphical source code in the sub-diagram comprises including two or more interconnected nodes in the sub-diagram.

5           5.       The method of claim 1,  
wherein the block diagram comprises a data flow block diagram.

6.       The method of claim 1, further comprising:  
executing the graphical program;  
wherein one or more user interface events to which the event structure node is  
10 configured to receive and respond are generated during execution of the graphical  
program;

wherein the event structure node is operable to receive and respond to the one or  
more user interface events generated during execution of the graphical program.

15           7.       The method of claim 6,  
wherein the one or more user interface events generated during execution of the  
graphical program are generated in response to user input to the graphical user interface  
of the graphical program.

20           8.       The method of claim 6,  
wherein, during execution of the graphical program, the block diagram executes  
on a first computer system and the graphical user interface is displayed on a display of a  
second computer system.

25           9.       The method of claim 6,  
wherein, during execution of the graphical program, the graphical user interface is  
displayed on a display of a computer system and the block diagram executes on a  
reconfigurable instrument connected to the computer system.

10. The method of claim 1,  
wherein said configuring the event structure node to receive the one or more user interface events comprises configuring the event structure node to receive notification when the one or more user interface events are generated during execution of the graphical program.

11. The method of claim 1,  
wherein said configuring the event structure node to receive the one or more user interface events comprises configuring the event structure node to receive information specifying occurrences of the one or more user interface events during execution of the graphical program.

12. The method of claim 1,  
wherein said configuring the event structure node to receive and respond to one or more user interface events comprises displaying graphical source code in the event structure node operable to receive and respond to the one or more user interface events.

13. The method of claim 1,  
wherein said configuring the event structure node to receive and respond to one or more user interface events comprises configuring the event structure node to receive and respond to a first user interface event;

wherein the first user interface event specifies a first user interface element of the graphical user interface and an action performed on the first user interface element.

14. The method of claim 13, wherein the first user interface element comprises one of:

- an indicator;
- a control;
- a menu element;

a window.

15. The method of claim 1,

wherein said configuring the event structure node to receive and respond to one or  
5 more user interface events in response to user input comprises receiving user input via a  
graphical user interface dialog to specify the one or more user interface events.

16. The method of claim 1, further comprising:

10 displaying an event registration node in the block diagram in response to user  
input;

configuring the event registration node to dynamically register a first user  
interface event during execution of the graphical program;

wherein, after said dynamically registering the first user interface event, the event  
structure node is operable to receive and respond to the first user interface event.

17. The method of claim 16,

wherein said configuring the event registration node to dynamically register a first  
user interface event during execution of the graphical program comprises connecting the  
event registration node to the event structure node in response to user input.

18. The method of claim 1, further comprising:

displaying an event un-registration node in the block diagram in response to user  
input;

25 configuring the event un-registration node to dynamically un-register a first user  
interface event during execution of the graphical program;

wherein, after said dynamically un-registering the first user interface event, the  
event structure node does not receive and respond to the first user interface event.

19. A computer-implemented method for creating a graphical program, the method comprising:

displaying an event structure node in a block diagram for the graphical program in  
5 response to user input; and

configuring the event structure node to receive and respond to one or more  
programmatic events during execution of the graphical program.

20. The method of claim 19,

10 wherein the event structure node comprises one or more sub-diagrams;

wherein said configuring the event structure node to receive and respond to the  
one or more programmatic events comprises configuring the one or more sub-diagrams to  
receive and respond to the one or more programmatic events.

21. The method of claim 20,

15 wherein, for each of the one or more sub-diagrams, said configuring the sub-  
diagram comprises:

specifying one or more programmatic events to which the sub-diagram  
corresponds, in response to user input;

20 including graphical source code in the sub-diagram in response to user input,  
wherein the graphical source code is operable to respond to the one or more  
programmatic events to which the sub-diagram corresponds.

22. The method of claim 19, wherein the one or more programmatic events  
25 comprise one or more of:

a user interface event;

a system event;

a timer event;

an event generated in response to data acquired from a device.

23. A computer-implemented method for creating a graphical program, the  
5 method comprising:  
creating a graphical user interface for the graphical program in response to user  
input;  
creating a block diagram for the graphical program in response to user input; and  
configuring the graphical program to receive and respond to one or more user  
10 interface events in response to user input.

24. The method of claim 23,  
wherein said creating the block diagram for the graphical program in response to  
user input comprises arranging a plurality of nodes on a display and interconnecting the  
15 plurality of nodes in response to user input.

25. The method of claim 23, further comprising:  
executing the graphical program;  
wherein one or more user interface events to which the graphical program is  
20 configured to receive and respond are generated during execution of the graphical  
program;  
wherein the graphical program is operable to receive and respond to the one or  
more user interface events generated during execution of the graphical program.

26. The method of claim 23,  
wherein said configuring the graphical program to receive and respond to one or  
more user interface events comprises configuring the block diagram to receive and  
respond to the one or more user interface events.

27. The method of claim 23,

wherein said configuring the block diagram to receive and respond to one or more user interface events comprises including graphical source code in the block diagram operable to receive and respond to the one or more user interface events.

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28. The method of claim 23,

wherein said configuring the graphical program to receive and respond to one or more user interface events in response to user input comprises receiving user input via a graphical user interface dialog to specify the one or more user interface events.

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29. The method of claim 24,

wherein said configuring the graphical program to receive and respond to one or more user interface events in response to user input comprises including an event structure node in the block diagram in response to user input;

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wherein the event structure node is operable to receive and respond to the one or more user interface events.

30. The method of claim 29,

wherein the event structure node includes one or more sub-diagrams;

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wherein each sub-diagram includes graphical source code specifying a response to one or more user interface events.

31. A computer-implemented method for executing a graphical program, the method comprising;

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creating the graphical program, wherein said creating the graphical program comprises configuring the graphical program to receive and respond to one or more user interface events;

executing the graphical program;

receiving user input causing generation of a first user interface event, wherein the graphical program is configured to receive and respond to the first user interface event; and

sending the first user interface event to the graphical program.

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32. A memory medium for creating a graphical program, the memory medium comprising program instructions executable to:

create a graphical user interface for the graphical program in response to user  
10 input;

display an event structure node in a block diagram for the graphical program in response to user input; and

configure the event structure node to receive and respond to one or more user interface events during execution of the graphical program.

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33. The memory medium of claim 32,

wherein the event structure node comprises one or more sub-diagrams;

wherein said configuring the event structure node to receive and respond to the one or more user interface events comprises configuring the one or more sub-diagrams to  
20 receive and respond to the one or more user interface events.

34. The memory medium of claim 33,

wherein, for each of the one or more sub-diagrams, said configuring the sub-diagram comprises:

25 specifying one or more user interface events to which the sub-diagram corresponds, in response to user input;

including graphical source code in the sub-diagram in response to user input, wherein the graphical source code is operable to respond to the one or more user interface events to which the sub-diagram corresponds.



